natives, the one great advantage of the El Paso project is that it would be an "all-American" endeavor that would not require the concurrence of the Canadian government. Some major disadvantages are that the combination pipeline—LNG system is considered less reliable and energy-efficient than an overland pipeline system. Also, the gas would not be delivered to the markets in the Midwest and East where it is most needed; instead, those markets would benefit only indirectly by an elaborate system of "displacement," with the entry of the Alaskan gas into the national distribution system allowing other gas to be assigned to them.

As the FPC environmental staff indicated, a pipeline built along the Fairbanks-Alcan corridor would offer the special advantage of not intruding upon either the Arctic Wildlife Range, a splendid wilderness of 9 million acres which groups such as the Sierra Club and Friends of the Earth hold dear, or the adjacent and quite similar wilderness region in the northern Yukon. This advantage could be compelling in a comparison with the Arctic Gas proposal if the Canadian government should choose not to allow early recovery of the Mackenzie gas reserves.

In fact, two recent developments have made the Alcan proposal look like a very strong contender for approval. First, there was the recommendation made to the White House on 1 May by the four FPC commissioners, acting pursuant to the Alaska Natural Gas Transportation Act of 1976, which leaves the ultimate choice to the President and Congress. All three proposals were held to be economically and environmentally acceptable, but the commissioners unanimously favored an all-overland pipeline system to the El Paso pipeline—LNG tanker system, provided of course the Canadian government consents to it. As between the Arctic Gas and Alcan proposals, the commissioners split 2 to 2, but with all four favoring Alcan in the event that Canada elects not to proceed with early development of its Mackenzie gas reserves.

Second, there was the report issued on 9 May by Justice Thomas R. Berger, a member of the Supreme Court of British Columbia, whom Canadian Prime Minister Pierre Trudeau appointed to head an extensive inquiry into the environmental and socioeconomic impacts that construction of a gas pipeline would have on the Canadian north (*Science*, 25 March). Berger recommended that no pipeline be built in the Mackenzie Valley for 10 years. In his view, this would allow time for settlement of native land claims and development of programs and institutions to permit the natives to adjust to the intrusion without loss of their culture and traditional way of life. He recommended further that no pipeline ever be built across the northern Yukon, a region which he said should be designated as a "national wilderness park."

Berger noted that the Alcan project would take an alternate route, across the southern Yukon. "Some of the concerns about wildlife, wilderness, and engineering and construction that led me to reject the corridor across the northern Yukon do not appear to apply in the case of the Alaska [or Alcan] Highway Route," he observed. "It is a route with an established infrastructure. In my view, the construction of a pipeline along this route would not threaten any substantial populations of any species in the Yukon or in Alaska."

But, as Berger also pointed out, it was not for him to endorse the Alcan project, as others would have to assess the socioeconomic and native claims issues to which it might give rise. Two other special inquiries, commissioned by the Trudeau government, will be made into the Alcan project and its possible impacts over the next several months.

Nevertheless, taken together with the report of the FPC commissioners, the Berger report gave the Alcan project a strong push. Some serious observers believe that it virtually killed Arctic Gas. The Berger inquiry was heavily publicized in the Canadian press last year and is reported to have generated widespread sympathy for the natives of the North and their attempts to preserve a distinct cultural identity.

Canada's National Energy Board (NEB) is to make its recommendation on the Arctic Gas and Alcan applications by 1 July, and the Trudeau government is supposed to take final action by early fall, thus allowing President Carter to make his own decision in a timely manner. Prime Minister Trudeau has indicated, as recently as this past March, that for Canada to leave the United States no option other than the El Paso proposal would not be in Canada's national interest. In the event Canada did so, all possibility of a pipeline financed by U.S. consumers being used either in part or in whole for the delivery of Mackenzie gas would be eliminated.*

In any case, once the Canadians have made their decision, President Carter will know whether the Arctic, Alcan, and El Paso options all remain alive, or whether only one or two of them do. Whatever choices left open, and whatever the President and Congress may decide, the U.S. government will not be behaving in the arbitrary way it did in approving the TAPS project. In that case, the decision was made without fully exploring the possibility of delivering the oil to the Midwest (where a hungry market was assured) by way of an overland corridor across Canada that could eventually accommodate both an oil and a natural gas pipeline.

A huge and costly environmental study was prepared by the Department of the Interior for TAPS, but the analysis made of the trans-Canada alternative was a pro forma effort which everyone knew would not upset the commitment of the North Slope oil companies and the Nixon Administration to an all-Alaskan pipeline and tanker system. In fact, much worse things have been said about it. Charles J. Cicchetti, now an economist and energy official for the state of Wisconsin who several years ago authored the book *Alaskan Oil: Alternative Routes and Markets*, recently told a Senate committee that the Interior study's conclusions that the trans-Canada alternative did not offer a clear advantage over TAPS on either economic or environmental grounds were "totally fabricated deceptions."

The federal courts, which environmental groups used to delay the TAPS project for a few years, might have demanded a more rigorous analytical effort except for the fact that, with the energy crisis coming on in 1973, Congress simply declared that all NEPA requirements had been met and gave TAPS the go-ahead. As a concession to the critics who were saying that the North Slope oil would wind up being sold to Japan, Congress did provide that no domestic oil could be sold abroad without a special presidential finding that the sales are in the national interest and will not reduce U.S. oil supplies. In the absence of such a finding, the North Slope producers may be reduced to an awkward, makeshift scheme for domestic deliveries, such as one that would involve the transfer of Alaskan pipeline oil from larger to smaller tankers at the Panama Canal.

In contrast to what has happened with respect to TAPS, the decision-making scenario that has thus far unfolded with respect to the gas delivery system seems to offer a hopeful lesson. It is that, if the government shows that its examination of alternatives is in earnest, industry will take the exercise seriously. In announcing the Alcan project in May 1976, John G. McMillian, board chairman of the Northwest Pipeline Corporation, specifically acknowledged that this project had its "genesis" in the draft environmental impact statement prepared by the FPC staff.

As it turned out, the Alcan proposal suffered from being hurriedly put together. This past February an FPC administrative law judge held, in recommending in favor of the Arctic Gas proposal, that the information offered in support of Alcan was so skimpy that that project could not possibly be approved on the basis of it. That Alcan is now back in the ball game, and with a vengeance, is probably due to the fact that the proposal was drastically amended just before the FPC commissioners had to pass on it—for instance, as now designed, Alcan would be a 48-inch express line instead of the more modest 42-inch system first proposed.

Yet, no matter how the final decision on the North Slope gas delivery system turns out, there is reason to think that it will have been arrived at rationally, and in a way vastly superior to the big put-on that seems to have characterized the decision-making in the case of TAPS. The Council on Environmental Quality is currently holding public hearings on the adequacy of the impact statements and will make its own recommendations to the White House by 1 July, as will other agencies such as the Department of the Interior. Once President Carter has heard from the Canadians and made his own decision as to which project to approve, Congress will have 60 days in which to confirm his choice or toss it back to him for another go-round. The final outcome should be known before the year is out.—Luther J.

* Also pending before the NEB is an application by Foothills Pipe Line Ltd., a partner in the Alcan project, to build a "Mapleleaf pipeline" from the Mackenzie delta down into Alberta. Foothills has acknowledged that there are not enough proved reserves in the delta to justify early construction of this line. But in response to NEB inquiries the company has submitted preliminary studies which suggest that, if the Mapleleaf pipeline were routed across the Yukon Territory along the Dempster Highway, instead of down the Mackenzie Valley, it could be tied in with the Alcan system. The resulting cost savings, Foothills has said, would be such that Mackenzie gas could be delivered to Canadian consumers at prices competitive with those possible with an Arctic Gas pipeline.

THE BALANCE(S) OF POWER SERIES: THE NAVAL BALANCE, PART VI(i)

HON. JOHN BRECKINRIDGE

OF KENTUCKY

IN THE HOUSE OF REPRESENTATIVES

Thursday, June 9, 1977

Mr. BRECKINRIDGE. Mr. Speaker, I continue my "Balance(s) of Power" series today by considering the United States-Soviet naval balance. An excellent article, appearing in Foreign Affairs—January 1977—by Adm. Stansfield Turner,[1] serves as an enlightening and professional introduction to this subject. Entitled "The Naval Balance: Not Just a Numbers Game," this outstanding article poses crucial questions in evaluating U.S. naval capabilities in relation to the Soviets, while sounding caution over facile approaches to comparing naval force structures.

[1] Stansfield Turner, Admiral, United States Navy, is presently Director, Central Intelligence Agency. A Rhodes Scholar, he has directed the Systems Analysis Division of the Chief of Naval Operations, commanded the U.S. Second Fleet, and served as President of the Naval War College.

Admiral Turner's article presents the challenge to us all: to ask meaningful questions and to face up to the answers we find. Successive articles in this naval balance section will follow in the weeks to come, identifying crucial U.S. naval objectives in the context of U.S. strategy and by discussing Soviet trends not simply in terms of tonnage or inventory, but as potential threats to specific U.S. capabilities. Admiral Turner's article follows:

THE NAVAL BALANCE: NOT JUST A NUMBERS GAME

(By Admiral Stansfield Turner)[1]

Comparisons of the seagoing armed forces of the Soviet Union and the United States are much in the news nowadays, and they are much in what happens behind the news. When our Secretary of State visits Moscow, or shuttles between capitals in Africa or the Middle East, he doubtless does not dwell on specific comparisons of military forces in his political talks, but the armed strength of our nation resonates in his words. Foreign policy transcends military capability, yet that capability tends to limit choices. Great wasteful wars have broken out in our century partly because of misperceived comparisons of armed forces. And war is as often a collapse as it is a continuation of foreign policy.

In offering a professional appraisal of the process of measuring the naval balance and of the relative present strengths of the two navies, I can give no answer either wholly comforting or wholly alarming to the usual, brusque question, "Let's get down to brass tacks. Who's ahead, Admiral?" My general tenor will be, rather, to focus on two questions addressed to people who think seriously about foreign policy: "What do you mean by 'ahead'?" and "How far 'ahead' will suit you, for foreign policy purposes?"

The argument from the facts will tend this way: that as a seagoing power, we are moving into a shrinking range of political options, and a higher level of risk. For this there are two reasons: a major industrial power, the Soviet Union, is building up a navy with dogged determination, reacting to its perception of a threat from our once-overwhelming armed superiority at sea; and meantime there is growing competition at home for military expenditures, especially when there are so many social demands on our national resources.

This article will attempt to define our present capabilities for performing the various missions of a sea force in the light of these two crisscrossing trends. Clearing away misconceptions will be much of the task, and will enable us to focus on what really matters in naval strength when the foreign policy chips go down on the table.

II

But how do you measure the comparative quality of navies? There has been much talk recently of an imbalance. We even hear Paul Revere-style rhetoric: "The United States is being left behind with a second-rate navy!" We hear comparably authoritative statistics, quoted with equal vehemence and positive pride, proving: "We're way out front." Congress and the public stand in between—one being asked to enact legislation affecting the size and quality of the Navy, the other being asked to finance those changes. Whom should they believe?

The problem is often addresed as though it were amendable to a straightforward count of ships, airplanes and submarines on both sides, a comparison of absolutes. The Soviet Navy either has 255 attack submarines or it hasn't. Compared to the 73 attack submarines of the United States, the Soviet Union would seem to have a clear advantage. But, then, how does one weigh the fact that the United States has 13 attack aircraft carriers while the Soviet Union has none? Does this compensate in some way for our lack of submarines? A purely quantitative comparison clearly fails to tell us what we want to know. What one navy requires may not be what another needs, if their missions differ. Submarines, for instance, are not necessarily pitted against each other. The question is, rather, to determine what the submarines of each side are assigned to accompish.

Thus, the first step in judging the naval balance between the United States and the Soviet Union is to understand what each of the two nations requires of its navy. Only then can we be sure that we are comparing opposed commensurables. Let us start by examining how the Soviet Navy came to be what it is today.

III

The Soviet Navy began to emerge as a significant naval force only after World War II. Navy expansion, begun in the early 1900s and interrupted by the Second World War, was not able to regain its initial momentum until the late 1940s. At that time the principal threat perceived by the Soviets was from U.S. aircraft carriers. Aircraft from these carriers could poject military power onto the Soviet mainland fom a distance of hundreds of miles at sea. To counter this threat, the Soviets had only a small navy, designed for coastal defense and largely inexperienced in deep ocean warfare. An accelerated shipbuilding program was begun, at first producing mainly with the navies of maritime powers ever since the Athenians defeated the Persians at Salamis in 80 B.C. The U.S. Navy concentrated almost exclusely on sea control through the end of World War II.

The Second World War also saw an expansion of our naval capabilities, primarily in the area of amphibious assault, so critical to the island campaign in the Pacific. Naval aircraft from carriers played an important role in supporting the Marines in these operations. These beginnings, and Admiral Halsey's carrier raids on Japan in the closing days of the war, were the seeds for the employment of carrier aircraft in attacks on shore targets at distances remote from the amphibious beachhead.

This trend gained importance particularly in the waning days of World War II, when the U.S. Navy found itself without a credible opponent to contest its use of the seas, and thus without a need for sea control. The atomic bomb seemed to herald an age of technological innovation—conceivably even an end to traditional warfare. The Navy saw the capability of its carrier-based aircraft to deliver atomic weapons to targets deep inland as its main contribution to the future defense needs of the nation, so it aggressively sought and won a role for its carriers in strategic deterrence. More recently, the carrier has conceded this role to the Polaris submarine and redirected its long-range strike capability to power projection ashore with conventional munitions, as in both Korea and Vietnam.

Today, the U.S. Navy's force structure and capabilities enable it to perform in: (1) strategic deterrence; (2) naval presence; (3) sea control (assertion and denial); and (4) projection of power ashore.

The comparative strengths of the two navies are illustrated in the table below.

TABLE I.—*Comparison of the capabilities of the United States and Soviet navies*

MISSION	SOVIET NAVY	U.S. NAVY
Strategic deterrence	Wide range	Wide range
Naval presence	Wide range	Wide range
Sea control	Denial only	Assertion and denial
Projection of power ashore	Very limited amphibious	Wide ranging tactical air and amphibious

Both navies are employed in strategic deterrence and naval presence; the U.S. Navy also aspires to assert control over the sea areas which the United States and its allies need for commercial and military purposes, while the Soviet Navy is primarily designed to deny that use to others, with some inchoate sea assertion potential; and, finally, the U.S. Navy has an extensive and sophisticated capability to project power ashore in contrast to the Soviet Navy's very limited ability.

How, then, do we compare the total balance of these two navies, given their varying capabilities to perform these different functions? There is no single formula. A first step is to recognize that only forces which oppose each other directly can be compared directly. Generally, neither "projection of power" forces nor "strategic deterrence" forces are designed to be employed against similar forces of an enemy. Therefore, they cannot be usefully compared in quantitative terms. One can only assese whether these forces seem capable of carrying out their purpose against other kinds of opposition. Strategic deterrence forces, for example, do not oppose other strategic deterrence forces. The natural opponents of a Polaris submarine are the enemy's antimissile systems and his sea denial forces, not his ballistic missile submarines. A strategic deterrent force is adequate if it deters the enemy from using nuclear weapons against us. It is facile to compare the 41 American ballistic-missile nuclear submarines with the 62 of the Soviets, for each force represents only a part of the national strategic capability. In another example, amphibious ships do not directly oppose other amphibious ships. Rather, in putting troops on a beach, amphibious ships and landing craft will be opposed by enemy shore defenses. Similarly, in their role of projecting power ashore, carrier-based tactical air forces are pitted against the enemy's varied forms of air defense; their mission is to penetrate to and destroy targets ashore.

On the other hand, forces designed for presence and sea control are intended to counter each other and therefore can be directly compared. "Presence" is the orchestrated use of naval forces below the level of hostility in support of foreign policy. Naval presence tasks range from informal ship visits intended to maintain ties with an ally and formal ship visits to cement a burgeoning friendship, to a menacing patrol just outside a nation's waters. When the United States and the Soviet Union have competing interests in an event or a place—and when they use their navies to demonstrate just how interested they really are—then the relative quantity, quality and character of these forces *in situ* can tip the balance and can affect what happens. Here seapower becomes a direct arm of foreign policy without a shot necessarily being fired. The U.S. Sixth Fleet and the Soviet Mediterranean fleet are such "presence" forces in direct competition along the Mediterranean littoral.

A direct and combative confrontation of naval forces occurs mainly in the "sea control" role. In such a context, numerical comparisons become not only relevant but cru-

cial. Here sea assertion forces are lined up against sea denial forces. Assertive sea control means quite simply that Navy X can move its task units or protect commercial shipping between point A and point B, or remain in position C, against opposition. Denial of sea control is the opposite: Navy Y can prevent Navy X from so moving its forces or successfully protecting it vital commerce.

To see where we stand today with regard to the balance of sea power, it is necessary to separate out projection and deterrence forces—because they are not comparable—and to focus on sea control and naval presence forces.

VI

No navy builds ships primarily for the presence mission. Ship design reflects almost exclusively those qualities needed in battle. Moreover, a ship's fighting capability determines how other governments and navies perceive the weight of that ship's presence. There are fundamentally two threats that the presence of a naval force can imply: to do harm to a nation by projecting power directly onto its territory or to sever a nation's sea lines of communication through blockade or sea denial.

In some instances, the United States and the U.S.S.R. may attempt to use naval presence to threaten each other or, at least, to signal broad intent and resolve. More frequently, American and Soviet presence forces compete against each other in terms of their impact on the actions of a third party. Both fleets, for example, were paraded in the 1970 and 1973 Arab-Israeli crises. The Sixth Fleet implicitly threatened to project power against the Arabs; the Soviet Mediterranean squadron threatened to deny the United States the use of the seas to do that. The issue was not what damage the U.S. carriers could have done in the Middle East or whether the Soviet force could have stopped them, but what impact the threat and counterthreat had on the contemplated actions of all the immediate participants.

The presence force is designed to equalize or counterbalance other forces in an area. Whether or not any particular force succeeds in influencing the actions of others will depend on subjective perceptions which may be based on numbers, on superficial appearances (size of ships, new versus old, etc.), on techniques of employment, or simply on the rhetoric which accompanies the fleet's arrival. That perception may or may not be an accurate appraisal of what would happen if shells started flying. But if the bluff is called and fighting ensues, presence has failed and must be succeeded either by combat or by backing down.

Two generalizations can be made on the relative potential of the United States and Soviet Navies in the presence mission. U.S. naval presence can threaten a full range of capabilities, both projection of power and sea denial. Soviet naval presence can threaten only sea denial. Nevertheless, though the United States can wield the presence tool more effectively, the Soviets have been playing the game cleverly. Realizing that they are dealing with perceptions, they are gaining maximum advantage from the fact that any change is news. Small improvements in capability can be touted to the unsophisticated as big ones. The new *Kiev*-class carriers, with only short range V/STOL (vertical/short-taxi takeoff and land) aircraft, have far less projection capability than our aircraft carriers, yet they are being portrayed by the Soviets as full-scale aircraft carriers. Change creates the impression of improvement as the Sovit move from little to more. And our Navy constricts and draws back from traditional deployment patterns, the Soviet Navy has been demonstrating increasingly imaginative and frequent global deployment of forces in response to developments in international politics—as in Angola, Mozambique, the Indian Ocean and West Africa. It seems a confirmation of the claim that we are a declining sea power and that they are a growing and restive one. The invalidity of that claim is academic if it is universally believed.

The nature of the debate in Washington over the budget tends to abet this impression. To ensure adequate appropriations for warfighting needs, our leaders point to the Soviets' naval expansion, their increasing presence in former Western preserves and their dedication to further naval growth. Some distortions are inevitable when complex issues are distilled and simplified for clarity and ease of general understanding; the formidable qualities of the threat are stressed; the available means to counter it perhaps slighted. We run the risk today of losing on the "presence front" unless we counter these negative impressions by exercising care in our public discussions. A doomsday picture convincingly drawn for a congressional budgetary committee may negatively influence other nations' perceptions of our naval effectiveness. And a few extra ships in the budget or at sea may not be enough to overcome an inaccurate perception of weakness.

To sum up; balance in the presence role is based objectively on ships, aircraft, guns and missiles, and subjectively on ideas and impressions. Ultimately, however, genuine warfighting capability remains essential; if the balance becomes truly unfavorable, beholders will be fooled for a whole only.

HENRY DENISON BAYLOR, RETIRING PRINCIPAL

HON. ROBERT J. LAGOMARSINO

OF CALIFORNIA

IN THE HOUSE OF REPRESENTATIVES

Thursday, June 9, 1977

Mr. LAGOMARSINO. Mr. Speaker, I take great pride in honoring a person who has devoted his life to the youth of this country so that they may prepare themselves for a better life.

Mr. Henry Denison Baylor is retiring after 38 years of service to the public and specifically to the education community in California. Mr. Baylor is the father of one son and one daughter.

He is, among other things, the principal of Dos Pueblos High School in Santa Barbara and has been since the school's inception in 1965. Mr. Baylor has been especially innovative in the application of the demonstration library on the campus, which features open areas. The WASC accreditation team was most complimentary regarding the high morale of the staff and the students of Dos Pueblos High School over the past 12 years, which reflects highly on Mr. Baylor's abilities as an administrator.

Under Mr. Baylor's leadership, Dos Pueblos High School has been one of the leaders in the area, both scholastically and athletically.

He began his teaching career in 1938, at Watsonville High School. He served there 3 years before moving to San Jose High School in 1946. In 1952, he accepted a teaching post in Guam, where he served for 2 years. Upon his return to California he accepted a position in the Carpinteria school system and served there 8 years before joining the Santa Barbara school system.

He has served the Santa Barbara High School District for the past 15 years as a teacher, counselor, assistant principal, and principal.

Mr. Baylor, the only principal that Dos Pueblos High School has known, stated his experiences this way:

> The opportunity and the challenge of building a school from the beginning was one of the most rewarding experiences in my career. In my opinion, after working in many different schools, I've never worked with a better staff than at Dos Pueblos High School. They are hard working and talented and are an outstanding group of people.

I ask you to join with me and Mr. Baylor's many colleagues and friends, in acknowledging Mr. Baylor's contributions to his fellow man over the past 38 years. I think that it is very appropriate to honor this man, who through his long years of service to the community has exemplified the traditional values of hard work and service to the community.

We all wish him the best. He will be dearly missed.

PORTLAND TRAIL BLAZERS

HON. AL ULLMAN

OF OREGON

IN THE HOUSE OF REPRESENTATIVES

Thursday, June 9, 1977

Mr. ULLMAN. Mr. Speaker, I rise to pay tribute to the Portland Trail Blazers, the new champions of the National Basketball Association.

As my colleagues know, the Trail Blazers were an expansion team only 7 years ago, and made the playoffs for the first time this year. In rapid succession, they defeated the Chicago Bulls—the hottest team in the league in the last month of the regular season; 2 games to 1, defeated the Denver Nuggets—the Midwest Division Champions—4 games to 2, and demolished the Kareem Abdul-Jabbar led Los Angeles Lakers—the team with the best record in the regular season—4 games to 0. Then, against the Philadelphia 76ers, a team with awesome individual talents, the Blazers lost the first 2 games in Philadelphia. Only 1 team in NBA history had lost the first 2 games and bounced back to win the title. That was the Boston Celtics in 1969, and it took them 7 games to win 4 to 3. Portland did not need 7 games. They won the next 4 games 129 to 107, 130 to 98, 110 to 104, and 109 to 107, and they did it by playing unselfish basketball, with all 12 players showing marvelous teamwork.

Fans in Oregon and across the Nation can be justifiably proud of the accomplishments of our Trail Blazers. The teamwork, sportsmanship and abilities they displayed in winning the title enhanced the image of professional basketball. This week is "Trail Blazer Fan Week" in my home State of Oregon, and as one fan, I want to join in applauding Coach Jack Ramsey, his staff, the entire organization, and all the players—Corky Calhoun, Johnny Davis, Herm Gilliam, Bob Gross, Lionel Hollins, Robin Jones, Maurice Lucas, Lloyd Neal, Larry Steele, Dave Twardzik, Wally Walker, and last, but certainly not least, Bill Walton. It was a pleasure to watch all of them play so well together.